symposium upon the biology of Biscayne Bay. Nearly half (48%) of the papers dealt with biological aspects of the Bay's ecosystems, and ranged in treatment from viruses and Fungi to shoreline vegetation and birds. One author observed that although 'the complexities of the many natural and cultural systems involved present formidable obstacles to both measurement and analysis, it would appear that only with a good deal of understanding of the overall natural *and* human processes as they interrelate in the Bay area, can effective resource-use planning be carried out and decisions successfully implemented.' One cannot argue with this premise; indeed judicious pursuit of such an understanding is the key to accomplishing effective resource-use planning.

With so much emphasis placed upon the biology of Biscayne Bay and what is *not* known about it, the excellent description of what is actually known of this area's oceanography, of the history of urban and agricultural development, and of Man's impact upon Biscayne Bay, tends to be obscured—unless the symposium results are perused in their entirety. Another author in this book aptly noted that 'costly research can be kept to a minimum by always orienting applied research towards the objective or resolving user conflicts.' Although this seems a harsh cynicism at first glance, the history of natural resource usage and management reveals it to be sadly true.

The thrust of this first symposium was somewhat parried by the way in which its results were received by those who convened for the second symposium*, because the preponderance of biological information that was needed but yet unknown tended to overshadow the known geographical history of Man's interaction with the natural environment of Biscayne Bay and the related consequences. Thus, the resolve for action expected from the second meeting is currently struggling against negative impressions that are held by some local planners and politicians who were in attendance on the earlier occasion. Such negative impressions result in part from contemplating the likely expense of the professional services needed to accomplish management objectives which would enable Biscayne Bay to become a valuable focal point of community pride, and in part from the uncertainty that those services would yield the kind of results which might be directly applied to attaining the desired goal.

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* In response to our enquiries about the second of these symposia, the Reviewer wrote (*in litt.* 21 January 1977). 'The second symposium was a workshop of managers. The only results published were a summary of the discussions and the text of a banquet speaker. I would find either difficult to review.'—Ed.

Understanding Climatic Change: A Program for Action. National Academy of Sciences, Washington, D.C. 20418: xv + 239 pp., figs & tables, 23 × 15 × 1.3 cm, (no price indicated), 1975.

This report, prepared by a distinguished group of scientists under the auspices of the U.S. Committee for the Global Atmospheric Research Programme, was intended to advise the U.S. Government 'on the urgent need for a coherent national research program on the problem of climatic variation' and 'on the steps necessary to address the same problem in the international scene'. For the benefit of the reader whose main concern is to know what the authors propose, a summary of the principal conclusions and recommendations is given immediately after the brief introductory chapter. But most readers will be inspired to continue at least into the next two chapters, which deal in turn with the physical basis of climate and climatic change and with past climatic variations and the projection of future climates. They will not be disappointed, for within the compass of some 40 pages they will find a lucid, sober, and authorititave, account of what has recently become a subject of great controversy. These two chapters should be made compulsory reading for all environmentalists who are concerned about the possibility of significant climatic change—and for all journalists who wish to assess the value of quack climatic forecasts before presenting them to the public.

The next chapter contains an interesting survey of ongoing research on climatic variation, and this leads up to the last chapter, on the proposed national climatic research programme. Finally, there are two appendixes of a more technical nature; the first is a survey of past climates, and the second is a survey of the climate simulation capability of global circulation models. They will clearly appeal more to the specialist than to the general reader.

The arguments presented in support of the proposed research programme are convincing as far as they go. After reading the report, nobody would seriously question the scientific value of a better understanding of the climate and of the predictability of climatic change. But what of its practical value? In these days of shortages of research funds, there is a greater need than ever to stress the practical benefits of any proposed research project; yet this is perhaps the weakest part of what is otherwise an excellent report.

Reference is of course made to the increasing vulnerability of Man's economic and social structure to climatic variations, to the impact of Man's activities on the climate, and to the use of improved climatic knowledge in making orderly social and economic adjustments to changes in climate. What is lacking is precise information about how such adjustments would be made. The authors state that there is at present a lack of comprehensive assessment of the impacts of climatic variation on human affairs, and include studies of these impacts in their recommended research programme. But it would have been possible to cite some more practical examples of such impacts, which would have helped to strenghten the argumentation. Perhaps the recent exceptionally cold spell in large parts of the U.S.A. and Canada was Nature's attempt to provide support!

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The Selfish Gene, by RICHARD DAWKINS. Oxford University Press, London: vii + 224 pp., 14.2 × 22.2 + 2.5 cm, £2.95, 1976.

It is still common in conservation circles to hear talk of the 'survival of the species' and of how natural selection 'favours species'. Richard Dawkins explodes this idea and, in a racy style, shows that it is individual (and therefore gene) survival that counts. He has no time for the group selectionists—Wynne-Edwards, Ardrey, Lorenz, and others —and explains how apparently altruistic behaviour, such as the hawk alarm-calls of small birds, can be understood in terms of survival of the individual.

I would not have thought there was a need for a book on this topic. It was not until I reached Chapter 7, on 'family planning', that I realised how many of the ideas derive